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ARCO Alaska, Inc.
Post Office Box 100360
Anchorage, Alaska 99510-0360
Telephone 907 276 1215

June 12, 1989

Mr. Leonard Verrelli, Chief
Air Quality Management
Division of Environmental Quality
Alaska Department of Environmental Conservation
P.O. Box O
Juneau, Alaska 99811-1800

Dear Mr. Verrelli:

RE: Prevention of Significant Deterioration Permit for Prudhoe Bay Flow Station 2; Responses to incompleteness

As a follow-up to our May 25, 1989 correspondence to you on the captioned subject, ENSR has been able to obtain Deadhorse Airport wind data for a period of nearly 20 years. This data were supplied by the AEIDC. The attached letter from ENSR contains the results of the analysis for comparing the Deadhorse data with that from Pad A, per your request in Item 5 of your April 27, 1989 letter. We were requested to provide a comparison between Pad A data and five years of Deadhorse meteorological data to ensure that selected data is representative. The results of the ENSR analysis show that while there are subtle differences, the characteristics of the winds match closely.

This completes our response to the issues raised in your correspondence on our March 1989 FS-2 permit application. We understand that this will allow for you to continue to process the application. If you have further questions, please do not hesitate to contact me at 265-1550.

Sincerely,

Kevin C. Myers

Kevin C. Myers
Manager, Permits and Compliance,
Prudhoe Bay/Lisburne

Enclosure
gsr/kcm

NOTE 5 JUN 89
LTR ABOUT FLARE
MODIFICATIONS, TOO!
IT'S IN "REGULAR"
FILE.

ENSR

Formerly ERT

ENVIRONMENT
JUN 7 1989
HEALTH & SAFETY

June 2, 1989

ENSR Consulting
and Engineering
1716 Heath Parkway
Fort Collins, CO 80524
(303) 493-8878

Mr. Scott Ronzio
ARCO Alaska, Inc.
700 "G" Street
Anchorage, AK 99510-0360

RE: Comparison of Deadhorse NWS Data Versus Pad A Measurements for Flow Station 2 PSD Permit Application

Dear Scott:

In accordance with your request, ENSR Consulting and Engineering has evaluated the comparability of meteorological data collected at Pad A in the Prudhoe Bay air monitoring program versus National Weather Service (NWS) data for the Deadhorse Airport. This evaluation was requested by the Alaska Department of Environmental Conservation (ADEC) in their letter of April 27, 1989 concerning the Prevention of Significant Deterioration (PSD) permit application for Flow Station #2. All other issues addressed in the ADEC letter of April 27 have been answered previously.

ENSR was able to obtain a summary of wind data for the Deadhorse Airport for a period of record of nearly 20 years spanning February 1, 1969 to December 31, 1989. These data were supplied by Arctic Environmental Information and Data Center at the University of Alaska - Anchorage. The Deadhorse wind data were obtained by NWS observers reading the electronic speed indicator panels at the station and manually recording the value each hour. Sensor height for the NWS wind measurement is 10 meters.

The Prudhoe Bay Unit Pad A data were collected electronically using Climatronics wind sensors and an Odessa Engineering digital data logger. The digital data logger sampled the wind speed and direction data once per second and constructed 5-minute averages from the 1-second data. Hourly averages were computed from the 5-minute average data. Wind direction was calculated as the average of the unit vector wind direction and wind speeds were scalar averages. The Pad A sensors were also mounted at 10 meters.

The attached sheets show the data comparison. The graphical wind rose and tabular listings indicate that wind data from the two sites compare quite favorably. Although there are subtle differences between the sites, the general characteristics of the winds match closely. Both sites show essentially a biomodal distribution of wind direction, with the most frequent winds from the northeast quadrant and a secondary maximum from the southwest quadrant. For the three most dominant wind directions (E, ENE, and NE), 46.2 percent of the Deadhorse Airport winds come from these sectors as compared to 48.6 percent of the Pad A winds.

ENSR

The most notable differences between the Pad A data and Deadhorse Airport data are in the wind speeds. The Pad A winds show lower velocities, averaging 8 miles per hour versus 11 miles per hour at the Deadhorse Airport. Pad A winds also show a general shift toward higher frequencies in the lowest wind speed categories and fewer winds in the highest wind speed categories when compared to the NWS data. The differences in wind speed may be due to the hourly average processing of the Pad A data versus the quasi-instantaneous "snapshot" of winds from the Deadhorse Airport observation.

Overall, the conclusion is that Pad A data compare quite favorably to the long-term NWS Deadhorse Airport measurements. Thus, the Flow Station 2 modeling prepared with the Pad A data should provide representative and accurate results. If you have any questions concerning this study, please feel free to contact me at your convenience.

Sincerely,

D. Howard Gebhart

D. Howard Gebhart
Senior Air Quality Scientist
Air Resource Studies Division

DHG/smc

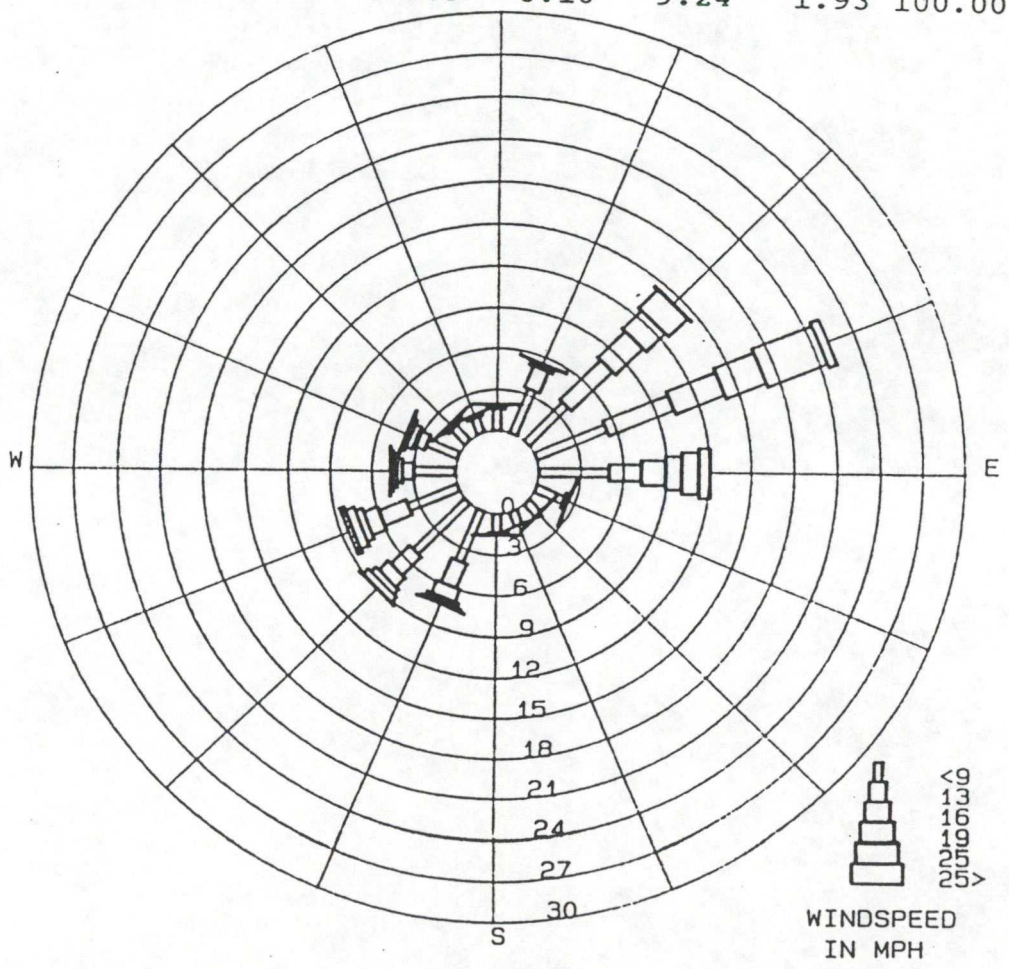
Ref: 0480-033

Enc.

GG JUN FF

PRUDHOE BAY MONITORING PROGRAM - PAD A
WIND ROSE ANALYSIS (PERCENT)
10/ 1/86 through 9/30/87
10 METER DATA

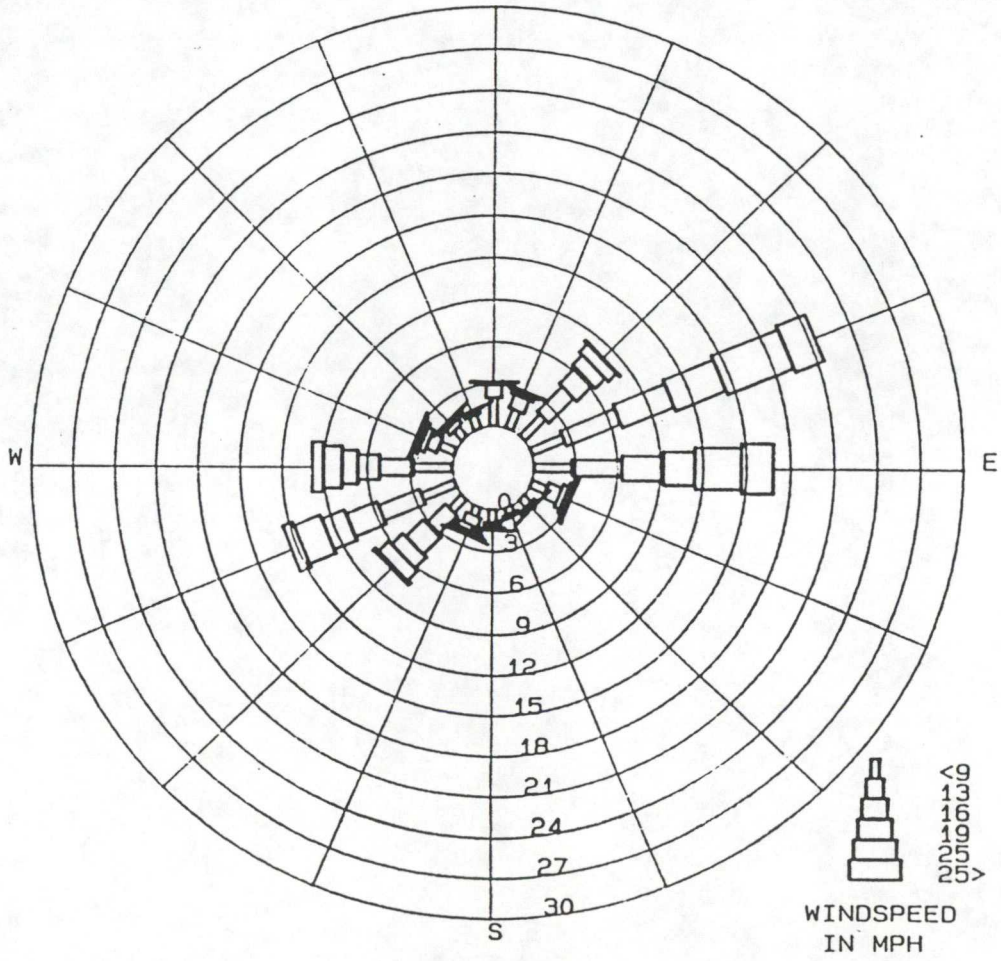
WIND DIRECTION	WIND SPEED (MI/HR) <= 8.9	<=12.9	<=15.9	<=18.9	<=24.9	>24.9	TOTAL	AVG SPEED
N	1.57	0.30	0.05	0.02	0.00	0.00	1.93	5.86
NNE	3.49	1.64	0.34	0.05	0.02	0.00	5.54	7.81
NE	3.91	4.05	2.69	1.87	1.85	0.07	14.44	12.31
ENE	5.37	4.88	3.73	3.07	4.48	0.60	22.11	13.79
E	4.97	2.25	1.67	1.12	1.19	0.82	12.03	11.76
ESE	2.15	0.29	0.05	0.00	0.00	0.00	2.48	5.62
SE	1.16	0.06	0.00	0.00	0.00	0.00	1.21	4.67
SSE	1.06	0.05	0.00	0.00	0.00	0.00	1.11	4.31
S	1.34	0.16	0.03	0.00	0.00	0.00	1.53	5.43
SSW	3.99	1.91	0.96	0.35	0.18	0.01	7.42	8.84
SW	5.16	1.87	0.95	0.49	0.52	0.09	9.08	8.93
WSW	3.78	2.08	1.09	0.52	0.64	0.34	8.45	10.62
W	2.93	0.81	0.38	0.29	0.22	0.00	4.62	8.01
WNW	2.38	0.84	0.43	0.24	0.10	0.00	3.99	7.98
NW	1.38	0.22	0.10	0.06	0.03	0.00	1.80	6.16
NNW	1.14	0.23	0.00	0.03	0.00	0.00	1.41	5.77
CALM	0.84						0.84	
TOTAL	46.63	21.62	12.48	8.10	9.24	1.93	100.00	



8,737 HOURS
FIGURE 1.

PRUDHOE BAY DEADHORSE WIND DATA
WIND ROSE ANALYSIS (PERCENT)
02/01/69 through 12/31/88
10 METER DATA

WIND DIRECTION	WIND SPEED (MI/HR) <= 8.9	<=12.9	<=15.9	<=18.9	<=24.9	>24.9	TOTAL	AVG SPEED
N	2.00	0.90	0.20	0.00	0.00	0.00	3.10	8.30
NNE	1.40	1.00	0.30	0.10	0.10	0.00	2.90	9.40
NE	2.10	2.50	1.60	1.00	0.80	0.10	8.10	12.40
ENE	2.50	4.20	3.90	3.70	4.90	2.10	21.30	16.20
E	2.70	3.60	2.90	2.20	3.20	2.20	16.80	16.00
ESE	1.20	1.00	0.40	0.20	0.20	0.10	3.10	10.90
SE	0.70	0.30	0.10	0.00	0.00	0.00	1.10	8.20
SSE	0.50	0.20	0.10	0.00	0.00	0.00	0.80	8.10
S	0.90	0.40	0.20	0.00	0.00	0.00	1.50	8.80
SSW	0.70	0.70	0.40	0.20	0.20	0.00	2.20	12.00
SW	1.30	1.90	1.70	1.10	1.00	0.20	7.20	13.70
WSW	2.50	3.10	2.30	1.70	2.00	0.80	12.40	14.40
W	2.70	2.40	1.50	1.10	1.30	0.80	9.80	13.70
WNW	1.20	0.80	0.40	0.30	0.20	0.00	2.90	10.90
NW	0.90	0.40	0.20	0.10	0.10	0.00	1.70	9.40
NNW	1.00	0.30	0.10	0.00	0.00	0.00	1.40	7.50
CALM	3.50						3.50	
TOTAL	27.80	23.70	16.30	11.70	14.00	6.30	99.80	



171,572 HOURS
FIGURE 2.